Volume 10, Number 3 July 1997

JTSTEB 10(3) 357–534 (1997)

ISSN 0894-9867

Journal of Traumatic Stress

PLENUM PRESS • NEW YORK–LONDON

Journal of Traumatic Stress, Vol. 10, No. 3, 1997

Psychometric Properties of the Civilian Version of the Mississippi PTSD Scale

Dean Lauterbach,[1,4] Scott Vrana,[2] Daniel W. King,[3] and Lynda A. King[3]

The psychometric properties of the Civilian Mississippi Posttraumatic Stress Disorder (PTSD) Scale were explored. The Mississippi is internally consistent ($\alpha \cong .89$, split-half $r \cong .80$), and it can discriminate between traumatized and nontraumatized respondents. However, its relationship with measures of PTSD was weaker than its relationship with measures of depression and anxiety, suggesting that it may be more of a general measure of distress. The results of a series confirmatory factor analyses provided mixed results. These findings were discussed along with recommendations for use of this instrument.

KEY WORDS: PTSD; assessment; Civilian Mississippi Scale.

One of the most widely accepted self-report measures of posttraumatic stress disorder (PTSD; American Psychiatric Association, 1987) is the Mississippi Scale for Combat-Related PTSD (Keane, Caddell, & Taylor, 1988). In pilot investigations of various potential PTSD screening devices for the National Vietnam Veterans Readjustment Study (NVVRS; Kulka et al., 1990) the Mississippi Scale was found to have the highest hit rate among the various contenders. It was therefore selected as the primary paper-and-pencil PTSD measure in the national survey portion of the NVVRS. Subsequent research has provided extensive support for the Mississippi Scale's temporal stability (Keane et al., 1988), internal consistency reliability (Keane et al.; Kulka et al.; McFall, Smith, McKay, & Tarver, 1990), diag-

[1]Psychology Service, Clement Zablocki V.A. Medical Center and Psychology Department, Northwestern State University, Natchitoches, Louisiana 71497.
[2]Department of Psychological Sciences, Purdue University, West Lafayette, Indiana 47907-1364.
[3]National Center for Posttraumatic Stress Disorder, Boston Veterans Affairs Medical Center.
[4]To whom correspondence should be addressed.

0894-9867/97/0700-0499$12.50/1

nostic utility, and discriminant validity (McFall et al.; McFall, Smith, Roszell, Tarver, & Malas, 1990; Murburg & McFall, 1992). Lastly, using item response theory, King, King, Fairbank, Schlenger, and Surface (1993) concluded that the majority of Mississippi Scale items provide meaningful information toward the assessment of the PTSD construct.

A less well-known device is the Mississippi Scale for Civilian PTSD (C-Mississippi). This version was also included in the NVVRS in the procedure to estimate the rate of PTSD in the civilian/nonveteran comparison group. The C-Mississippi Scale is very similar to its military counterpart. The versions contain parallel items, but some wording changes were necessary to accommodate nonmilitary respondents. In the military version, persons are asked to respond to statements regarding the sequelae of their military experiences, and in the civilian version persons rate the severity of symptoms relative to some generally defined earlier time.

The C-Mississippi Scale is being increasingly used by research groups studying a wide range of populations. For example, several research teams (Brown, Recupio, & Stout, in press; Ouimette et al., 1994; Triffleman & Ball, 1994) have used the C-Mississippi Scale to document the incidence and severity of PTSD symptomatology among patients receiving treatment for substance abuse. Hovens and Van der Ploeg (1993) used a Dutch translation of the instrument to assess PTSD symptomatology among psychiatric inpatients, and a telephone-interview version of the scale was used to assess symptoms of stress among residents who had experienced the 1989 Loma Prieta/San Francisco Bay earthquake (Inkeles, Loux, & Bourque, 1995). Also, the C-Mississippi Scale was one of the primary dependent measures used to investigate predictors of stress-related outcomes among victims of the 1991 Oakland/Berkeley firestorm (Koopman, Classen, & Spiegel 1994). Lastly, in a sample of undercover law enforcement officers, scores on the C-Mississippi Scale were related to several indices of occupational stress (Love, Tolsma, & Ghosh, 1994).

Thus far, there has been only one study of the C-Mississippi Scale's psychometric properties: Vreven, Gundanowski, King, and King's (1995) analyses of the data from the civilian/nonveteran participants in the NVVRS. That study provided information on the measure's descriptive statistics, internal consistency, concurrent validity, and factor structure. A comparison of the internal consistency of the civilian and military versions of the Mississippi Scale revealed greater heterogeneity among items in the civilian version as evidenced by a lower mean item-total correlation (.39 vs .59) and lower values for coefficient alpha (.86 vs .94).

To examine concurrent validity, Vreven et al. (1995) assessed the relationships of the C-Mississippi Scale to two indices of exposure to traumatic events, a specific measure of PTSD symptomatology (Diagnostic

Interview Schedule [DIS]; Robins, Helzer, Croughan, & Ratcliff, 1981), and two indices of general psychological adjustment (demoralization index and hostility index, both obtained from the Psychiatric Epidemiology Research Interview; Dohrenwend, 1982). They found that C-Mississippi Scale scores were significantly related to stressor exposure, both in terms of the number of traumatic events and in terms of the number of other highly stressful (but less traumatic) events. These relationships accounted for 33% and 10% of the variance in C-Mississippi Scale scores, respectively. There was a significant amount of shared variance (8.5%) between C-Mississippi Scale scores and the DIS scores, which are specific measures of PTSD symptomatology. The authors pointed out that while this relationship was highly significant, it does not meet standards for the convergence of multiple measures of a construct, suggesting that one or both of the measures may have deficiencies. By contrast, the C-Mississippi Scale was strongly related to one of the general indicators of psychological distress (demoralization index: $r = .63$), suggesting that the C- Mississippi Scale may be an indicator of general psychological distress.

Finally, a confirmatory factor analysis was also performed by Vreven et al. (1985) that compared the factor structure of the C-Mississippi Scale with the factor structure of the military version obtained from an earlier study (King & King, 1994). The results indicated that the factor structure of the civilian version of the Mississippi Scale is somewhat different from its military counterpart.

The present investigation sought to provide further evidence on the psychometric properties of the Civilian Mississippi Scale. Data were taken from two studies that assessed trauma exposure and symptom development and included the C-Mississippi Scale. Estimates of internal consistency reliability and evidence for convergent and discriminant validity were derived. Lastly, the model from the confirmatory factor analyses previously performed by King and King (1994) and Vreven et al. (1995) was replicated on the combined sample.

Method

Sample

A complete description of the sample characteristics for Study I has previously been reported in Vrana and Lauterbach (1994). The participants in both studies (Study I: $N = 440$, 234 men, 206 women; Study II: $N = 402$, 225 men, 177 women) were undergraduate students enrolled in an introductory psychology class who received course credit for participating.

The majority were in either their freshman or sophomore year of college (80%), single (97%), and Caucasian (91%). The participants came from a variety of communities including rural areas (16%), small towns (28%), suburbs (38%), and urban areas (18%). Traumatic events were frequently reported in both samples with approximately 82% (Study I = 84%; Study II = 80%) of the respondents reporting that they had experienced at least one traumatic event that was sufficient in intensity to potentially produce symptoms of PTSD. Multiple traumatic events were also frequently reported in both samples, with approximately 30% of the respondents reporting four or more traumatic events. This incidence of traumatization is higher than that reported in previous studies of nonpatients (Breslau, Davis, Andreski, & Peterson, 1991; Norris, 1992) and suggests that these samples may have over reported their experience of trauma. However, the range of number and types of events experienced supports the use of these samples in validating a measure of civilian trauma symptomatology. On average, men experienced a greater number of events than did women. This difference was significant in Study I (men $M = 2.98$; women $M = 2.52$ events; $t(438) = 2.05$, $p < .05$), but not in Study II.

Measures

Civilian Mississippi Scale. The original version of the Mississippi Scale for PTSD is a 35-item self-report scale derived from DSM-III (American Psychiatric Association, [APA], 1980) criteria, and it was designed to assess combat-related PTSD (Keane et al., 1988). The C-Mississippi Scale assesses PTSD resulting from other types of traumatic experiences. Items are rated on a 5-point Likert scale and are anchored by a variety of terms including: "Not at all True"/"Extremely True," "Never True"/"Always True," "Very Unlikely"/"Extremely Likely," and "Never"/"Very Frequently." In creating the civilian version, eleven questions were rephrased slightly such that reference to military service was replaced with a more general reference to the past. For example, in the original version Item 1 read "Before I entered the military, I had more close friends than I have now," and in the civilian version the same item was changed to read "In the past, I had more close friends than I have now." In both the civilian and military versions, four items were later added to reflect changes in the DSM-III-R (APA, 1987) criteria. The four additional items assess symptoms of reexperiencing, psychogenic amnesia, hypervigilance, and increased arousal when confronted with reminders of the traumatic event. In the present study, findings related to both the 35-item and the 39-item versions of the C-Mississippi Scale are provided.

Impact of Event Scale (IES). The IES is a 15-item measure of PTSD symptomatology that has been used extensively in trauma research (Horowitz, Wilner, & Alvarez, 1979; Zilberg, Weiss, & Horowitz, 1982). Respondents rate how frequently they have experienced each symptom during the past 7 days. Symptom frequency is rated on a 4-point Likert scale (0, 1, 3, 5) anchored by "not at all" and "often." The IES yields scores on an intrusion subscale and an avoidance subscale, which correspond to the DSM-IV (APA, 1994) symptom clusters intrusive recollections and avoidance, respectively. The IES was collected in Study I only.

Purdue PTSD Questionnaire-Revised (PPTSD-R). The PPTSD-R consists of 17 items, one corresponding to each of the DSM-III-R criteria for PTSD (Lauterbach & Vrana, 1996). Respondents rate the frequency of occurrence of each symptom on a 5-point Likert scale anchored by "not at all" (1) and "often" (5) with a rating of 3 labeled "sometimes." The scale can be used to generate dichotomous scores, reflecting presence/absence of the disorder, and continuous scores, reflecting symptom severity. Continuous scores can range from 17 to 85, with higher scores corresponding to more severe symptomatology. In addition to the total score, the PPTSD-R yields scores for three subscales reflecting symptoms of reexperiencing, avoidance, and arousal as organized in the DSM-III-R.

Traumatic Events Questionnaire (TEQ). This questionnaire has been described at length elsewhere (Vrana & Lauterbach, 1994). Briefly, it assesses experiences with 11 specific types of traumas reported in the DSM-III-R and the empirical literature as potentially eliciting posttraumatic symptoms. The events listed on the TEQ include: crime, witnessing someone die, rape, abuse as an adult or child, combat experience, unexpected death of a loved one, fires/explosions, accidents (industrial/farm/car), serious life threats, and natural disasters. In addition, two residual categories were included, labeled "other event" (any other very traumatic event not listed) and "event can't tell" (events so traumatic that respondents cannot discuss them). In the second study from which data were drawn, a slightly revised version of the TEQ was used. The item assessing combat experience was omitted because it was endorsed by less than 1% of the sample in the first study, and two items were combined (fire/explosion and accident). On this questionnaire, respondents first indicate whether or not they have experienced any of these traumatic events. Those experiencing multiple events judge which was the most traumatic. Persons experiencing none of the events briefly describe the most traumatic thing to ever happen to them. These latter persons were classified as experiencing "no event" for the purposes of this study.

Psychopathology measures. In addition to the measures of PTSD symptomatology and traumatic experiences previously described, several well-es-

tablished measures of related psychopathology were administered. To assess depression the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) was used. To assess anxiety, the Trait version of the State-Trait Anxiety Inventory (STAI-T; Spielberger, 1983) was administered.

Procedure

The same procedure was used for both studies from which data were drawn. Participants were administered instruments in small groups ranging in size from 10 to 50. They first completed the BDI (Beck et al., 1961) and STAI-T (Spielberger, 1983), followed by the TEQ, to assess the presence/absence of various types of traumatic events. They then completed the three measures of PTSD (C-Mississippi Scale, IES, and PPTSD-R) based on the most traumatic event they had experienced.

Results

Descriptive Statistics and Reliability

The means and standard deviations of the C-Mississippi Scale for both studies are presented in Table 1. For comparison, the values reported by Vreven et al. (1995) in their analysis of the NVVRS data set are included. The mean values obtained in the present studies are higher than those reported by Vreven et al. Table 2 lists various indices of internal consistency. Again, for comparison, internal consistency data from the NVVRS are included for the military and civilian versions of the Mississippi Scale.

Table 1. Means and Standard Deviations for the C-Mississippi Scale

	Study I (N = 440)		Study II (N = 402)		NVVRS Civilian
	35-Item Scale $M(SD)$	39-Item Scale $M(SD)$	35-Item Scale $M(SD)$	39-Item Scale $M(SD)$	35-Item Scale $M(SD)$
Men	74.6(14.6)	83.1(15.9)	73.9(15.5)	80.6(15.1)	64.8(14.0)[a]
Women	74.1(15.3)	82.6(16.7)	72.9(19.3)	79.9(18.5)	61.7(11.1)[a]
Overall	74.4(14.9)	82.9(16.3)	73.5(17.3)	81.8(19.1)	64.3(13.2)[b]

[a]These values are from the C-Mississippi Scale computed by the original NVVRS researchers. [b]These values were reported by Vreven et al. (1995).

Table 2. Indices of Internal Consistency for the C-Mississippi Scale

	Study I (N = 440)		Study II (N = 402)		NVVRS	
	35-Item Scale	39-Item Scale	35-Item Scale	39-Item Scale	Civ.[a] 35-Item Scale	Mil.[b] 35-Item Scale
Average item-total correlation	.40	.40	.41	.42	.39	.59
Split-half reliability	.78	.80	.80	.82		
Coefficient alpha for 1st half	.78	.79	.80	.81		
Coefficient alpha for 2nd half	.80	.81	.78	.82		
Coefficient alpha for total	.88	.89	.89	.90	.86	.94

[a]These values were reported by Vreven et al. (1995).
[b]These values were reported by King et al. (1993).

Corrected item-total correlations were calculated first for all items. These correlations were consistent across both studies and ranged from ~.15 (Item 2, guilt over past) to ~.60 (Item 15, inability to go on, and Item 26, feeling misunderstood), with a mean value of ~.41 across the two studies. Findings for the 35-item scale and the 39-item scale were essentially equivalent. These values are similar to the C-Mississippi Scale data from the NVVRS data set. However, they are substantially lower than those obtained for the military version. Split-half coefficients were computed next and were in the moderate to high range (~.80). Finally, coefficient alpha was computed and was relatively high (~.89 for both samples and both 35- and 39-item versions). The values are slightly higher than those reported by Vreven et al. (1995) in their analysis of the NVVRS data. However, they are somewhat lower than the mid-.90s typically reported for the military version. These data suggest that the C-Mississippi Scale measures a unitary construct; however, it is less internally consistent than the military version.

Evidence for Validity

The first analysis assessed the concurrent validity of the C-Mississippi Scale by testing its ability to distinguish between groups who did and did

not experience a traumatic event. The people who reported no traumatic events were compared to those who reported at least one traumatic event on levels of PTSD symptomatology with a Trauma group (yes, no) × Gender (male, female) ANOVA. Unlike previous studies that reported significantly higher levels of PTSD among women (Breslau et al., 1991; Norris, 1992) the present studies did not find a significant main effect for gender. The traumatized group's 39- item C-Mississippi Scale scores were significantly higher than their nontraumatized counterparts in both studies, Study I: $F(1,433) = 12.9$, $p < .0005$, Study II: $F(1,398) = 8.93$, $p < .003$. None of the interactions were significant. Thus, higher scores on the C-Mississippi Scale are related to having experienced a traumatic event.

Traumatic events differ in the magnitude of PTSD symptoms they engender (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Norris, 1992; Resnick, Kilpatrick, Dansky, Saunders, & Best 1993). To determine whether the C-Mississippi Scale is sensitive to the type of event, each person was placed into one category according to his/her worst event, and a one-way ANOVA was carried out. Duncan's Multiple Range Tests were included to determine which events differ in the magnitude of PTSD symptoms they produce. Since only four persons reported having combat experience, this category was combined with "life threat" for this analysis. These categories were combined because the respondents' descriptions of these experiences were similar. Different events did produce different levels of posttraumatic symptoms across both samples, Study I: $F(12,420) = 2.70, p < .0016$, Study II: $F(11,390) = 3.64, p < .0001$. In Study I, experiencing an event that is too difficult to discuss ($M = 100.9$) and crime ($M = 89.0$) produced the highest scores on the C-Mississippi Scale. On the other end of the spectrum, persons whose worst experiences involved natural disasters ($M = 80.7$) reported the least intense posttraumatic symptoms. In Study II, experiencing a rape ($M = 100.0$) or child abuse ($M = 92.8$) produced the highest scores on the C-Mississippi Scale while persons whose worst experiences involved accidents ($M = 76.0$) and natural disasters ($M = 76.6$) reported the least intense posttraumatic symptoms. These findings suggest that the C-Mississippi Scale is sensitive to the impact of different types of traumatic events in a manner consistent with previous studies (Kessler et al., 1995; Norris, 1992; Resnick et al., 1993).

In the third step toward assessing the convergent and discriminant validity of the C-Mississippi Scale, the magnitude of its relationships to measures of the same construct (i.e., PTSD) was compared to the magnitude of its relationships to measures of the related (but not identical) constructs of anxiety and depression (see Table 3). The correlations between the C-Mississippi and the two general measures of psychopathology, BDI: $r = .71$, STAI-T: $r = .70$, were each significantly larger than the correlations

Table 3. Intercorrelations Among Measures of PTSD, Anxiety, and Depression[a]

	C-Miss[b]	IES	PPTSD-R	STAI-T
IES	.36			
PPTSD-R	.52	.66		
STAI-T	.70	.21	.36	
BDI	.71	.23	.39	.75

[a]1-tailed significance: $p < .001$ for all correlations. $N = 435$ (Study I).
[b]The 39-item version of the C-Mississippi was used in this analysis.

between the C-Mississippi Scale and the two specific measures of stress-related symptomatology, PPTSD-R; $r = .52$; IES: $r = .36$. Conversely, the correlation between the PPTSD-R and the IES, $r = .66$ (both measures of PTSD), was significantly larger than the correlations between these two measures and the measures of anxiety and depression (range of $r = .21$ to .39). All these hypothesis tests were significant at $p < .0001$. These hypotheses were tested using a z-score formula for comparing correlated correlation coefficients (Meng, Rosenthal, & Rubin, 1992). The findings suggest that the C-Mississippi Scale may be a more general measure of psychopathology rather than a specific measure of PTSD symptomatology.

Factor Structure

Finally, we examined the dimensionality of the C-Mississippi Scale through a set of confirmatory factor analyses, using the combined sample of 823 persons for whom there were complete data. We analyzed a matrix of covariances among item scores, applied generalized least squares estimation procedures, and used the PRELIS 2 (Joreskog & Sorbom, 1993b) and LISREL 8 (Joreskog & Sorbom, 1993a) programs. Analyses were conducted for both the 35-item and the 39-item versions of the C-Mississippi Scale. Model specification paralleled the prior work of King and King (1994) and Vreven et al. (1995) on the military and civilian versions, respectively. Sequential chi-square difference tests among hierarchically nested models were used to identify the model that best fit the data. The hypothesized structure was that of a single second-order factor, the "umbrella PTSD construct," that subsumes four first-order factors or symptom categories: (a) Reexperiencing and Situational Avoidance, (b) Withdrawal and Numbing, (c) Arousal and Lack of Behavioral or Emotional Control, and (d) Self-Persecution (Guilt and Suicidality). Justification for this

higher-order structure and further details on the analytic strategy are provided by King and King (1994).

Table 4 summarizes the results of the sequential chi-square difference tests used to assess the factor structure of the C-Mississippi Scale. For the 35-item version, the second-order solution provided the best fit to the data, owing to the nonsignificant difference between its chi-square statistic and that of the more saturated four-factor first-order solution, and the significantly poorer fit subsequently found for the single-factor first-order solution. Therefore, in this case, the principle of parsimony dictates that the hypothesized higher-order factor structure—an overriding PTSD construct subsuming four symptom categories—best explains the relationships among the 35 C-Mississippi Scale items. For this model, the associated fit indices were as follows: root mean square error of approximation (Steiger, 1990), .044; LISREL goodness of fit index (Joreskog & Sorbom, 1993a), .90; normed fit index (Bentler & Bonett, 1980), .86; comparative fit index (Bentler, 1990), .91; and incremental fit index (Bollen, 1989), .91.

In contrast, the findings for the 39-item version of the scale were not consistent with the hypothesized second-order solution. As Table 4 shows, the discrepancy index for the second-order factor structure differed significantly from that of the more saturated first-order structure that allowed for correlations among four symptom-based factors. Thus, for the 39-item C-Mississippi Scale, the higher-order model does not appear to account for the data as well as the 4-factor first-order model. Fit indices for the 4-factor first-order model were: root mean square error of approximation, .043; LISREL goodness of fit index, .89; normed fit, .86; comparative fit index, .91; and incremental fit index, .91.

Discussion

As mentioned at the outset of this paper, the military version of the Mississippi Scale for PTSD has an extremely strong validational record while its civilian counterpart has received relatively less attention. The present paper furnished additional data on the psychometric properties of the C-Mississippi Scale. This measure possesses good internal consistency estimates, it can distinguish between persons who have and those who have not experienced a traumatic event and between persons who have experienced different types of events.

The values for the C-Mississippi Scale in the present study were higher than those reported by Vreven et al. (1995) in their analysis of the NVVRS data set. The participants in the Vreven et al. study were older adults while participants in the current study were late adolescents. The relatively higher

Table 4. Sequential Chi-Square Difference Tests for Factor Structure

Model	χ^2	*df*	*p*	Δ from Previous χ^2	Δ from Previous *df*	Δ from Previous *p*
35-Item version[a]						
Four correlated first-order factors	1448.93	554	.00			
One second-order factor, leading to four first-order factors	1453.49	556	.00	4.56	2	.10
One first-order factor	1655.58	560	.00	202.09	4	.00
39-item version[b]						
Four correlated first-order factors	1778.06	696	.00			
One second-order factor, leading to four first-order factors	1786.41	698	.00	7.81	2	.02

[a]See King and King (1994) for details on model specification and item categorizations.
[b]The four additional C-Mississippi Scale items were assigned to item categories as follows: Items 36 and 39 to Reexperiencing and Situational Avoidance; item 37 to Withdrawal and Numbing; Item 38 to Arousal and Lack of Control.

values obtained for the C-Mississippi Scale in the present study may reflect the more general tendency of adolescents to report higher levels symptomatology than older adults. This reflects one weakness in the present study and argues for replication with an older sample of participants.

One methodological difference between the NVVRS and the present study may account for this difference. In the present study participants were first asked to identify the worst event they had experienced and then complete the C-Mississippi Scale. Thus, there was an explicit link between trauma exposure and symptom development, and respondents may have been more likely to understand the task of rating their symptoms relative to a trauma. By contrast, in the national survey portion of the NVVRS, which examined the incidence of PTSD in the civilian comparison group, respondents were not asked to use the instrument in reference to any specific traumatic experience. Thus, they completed the C-Mississippi Scale without a clear reference point and may not have understood the task and simply rated the level of their current symptomatology relative to some earlier time in their lives.

One surprising finding was that there were no differences in mean values between men and women on the C-Mississippi Scale. This was unforeseen since the findings from study one (previously reported in Vrana & Lauterbach, 1994) found gender differences when using the Impact of Event Scale. Similarly, Breslau et al. (1991) and Norris (1992) found that women were at greater risk than men for developing symptoms of PTSD following a traumatic event. It is unclear if the C-Mississippi Scale is a gender neutral measure of PTSD or if it is insensitive to real differences between women and men in the level of PTSD symptoms.

The evidence on the convergent and discriminant validity of the C-Mississippi Scale was not promising. One would expect that the C-Mississippi Scale would be most strongly related to other measures of PTSD, moderately related to measures of similar (not identical) constructs, and uncorrelated with measures that assess different constructs. A different pattern of results emerged with the C-Mississippi Scale being more strongly related to measures of depression and anxiety than to measures of PTSD. This suggests that the C-Mississippi Scale may be a more general measure of psychological discomfort rather than a specific measure of PTSD symptomatology and is consistent with the findings of Vreven et al. (1995).

One final issue pertains to the inconsistency in factor structure when comparing this study's findings to earlier findings. Using the 35-item version of the C-Mississippi Scale, Vreven et al. (1995) found that they could not support the higher-order solution that had been reported by King and King (1994) for the military form of the instrument. In contrast, the results of the present study are at variance with those of Vreven et al. but are con-

sonant with those of King and King. Inconsistent factor structures across samples for a given instrument are somewhat troubling in that one would prefer a common underlying structure account for the patterns of relationships among item responses; this would represent, in essence, the validation of the conceptualization of PTSD across groups. To complicate matters further, in the present study, a higher-order solution was found for the 35-item version but not for the 39-item version. This is likewise perplexing, since one would not expect the addition of four rationally categorized items to alter the factor structure very much.

Without doubt, we recommend extreme caution in using the C-Mississippi Scale as a measure of PTSD symptomatology. The findings on the convergent/discriminant validity data call into question the construct validity of this measure, and there are alternate measures of civilian PTSD available (e.g., The Los Angeles Symptom Checklist: King, King, Leskin, & Foy, 1995; Purdue PTSD Questionnaire-Revised: Lauterbach & Vrana, 1996). We also recommend further research directly comparing the civilian and military versions of the Mississippi Scale to understand why these two measures have such seemingly different properties. Lastly, findings from the current study were limited by the absence of a clinician-administered diagnostic measure of PTSD. Future studies should consider inclusion of such an instrument to examine diagnostic utility of the C-Mississippi Scale.

References

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.

American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., rev.). Washington, DC: Author.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4,* 561-571.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107,* 238-246.

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88,* 588-606.

Bollen, K. A. (1989). *Structural equations with latent variables.* New York: Wiley.

Breslau, N., Davis, G. C., Andreski, P., & Peterson, E. (1991). Traumatic events and posttraumatic stress disorder in an urban population of young adults. *Archives of General Psychiatry, 48,* 216-222.

Brown, P. J., Recupio, T. R., & Stout, R. (in press). PTSD-substance abuse comorbidity and treatment utilization. *Addictive Behaviors.*

Dohrenwend, B. P. (1982). *Psychiatric Epidemiology Research Interview (PERI).* New York: Columbia University, Social Psychiatry Research Unit.

Horowitz, M. J., Wilner, N., & Alvarez, W. (1979). Impact of Event Scale: A measure of subjective stress. *Psychosomatic Medicine, 41*(3), 209-218.

Hovens, J. E., & Van der Ploeg, H. M. (1993). Posttraumatic stress disorder in Dutch psychiatric inpatients. *Journal of Traumatic Stress, 6,* 91-101.

Inkelas, M., Loux, L. A., & Bourque, L. B. (1995). *Dimensionality and reliability of the civilian version of the Mississippi Scale for combat-related posttraumatic stress disorder in a post-earthquake community sample.* Manuscript submitted for publication.

Joreskog, K. G., & Sorbom, D. (1993a). *LISREL 8 user's reference guide.* Chicago: Scientific Software.

Joreskog, K. G., & Sorbom, D. (1993b). *PRELIS 2 user's reference guide.* Chicago: Scientific Software.

Keane, T. M., Caddell, J. M., & Taylor, K. L. (1988). Mississippi Scale for Combat-related Posttraumatic Stress Disorder: Three studies in reliability and validity. *Journal of Consulting and Clinical Psychology, 56,* 85-90.

Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry, 52,* 1048-1060.

King, L. A., & King, D. W. (1994). Latent structure of the Mississippi Scale for combat-related posttraumatic stress disorder. *Assessment, 1,* 275-291.

King, D. W., King, L. A., Fairbank, J. A., Schlenger, W. E., & Surface, C. R. (1993). Enhancing the precision of the Mississippi Scale for combat-related posttraumatic stress disorder: An application of item response theory. *Psychological Assessment, 5,* 457-471.

King, L. A., King, D. W., Leskin, G., & Foy, D. W. (1995). The Los Angles symptom checklist: A self-report measure of posttraumatic stress disorder. *Assessment, 2,* 1-17.

Koopman, C., Classen, C., & Spiegel, D. (1994). Predictors of posttraumatic stress symptoms among survivors of the Oakland/Berkeley, California firestorm. *American Journal of Psychiatry, 151,* 888-894.

Kulka, R. A., Schlenger, W. E., Fairbank, J. A., Hough, R. L., Jordan, B. K., Marmar, C. R., & Weiss, D. S. (1990). *Trauma and the Vietnam war generation: Report of findings from the National Vietnam Veterans Readjustment Study.* New York: Brunner/Mazel.

Lauterbach, D. & Vrana, S. (1996). Three studies on the reliability and validity of a self-report measure of posttraumatic stress disorder. *Assessment, 3,* 17-25.

Love, K. G., Tolsma, J. L., & Ghosh, P. (1994, November). *Antecedents and correlates of PTSD in policing: Undercover assignments.* Paper presented that the conference of the International Society for Traumatic Stress Studies, Chicago, IL.

McFall, M. E., Smith, D. S., MacKay, P. W., & Tarver, D. J. (1990). Reliability and validity of the Mississippi Scale for Combat-related Posttraumatic Stress Disorder. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 2,* 114-121.

McFall, M. E., Smith, D. S., Roszell, D. K., Tarver, D. J., & Malas, K. L. (1990). Convergent validity of measures of PTSD in Vietnam combat veterans. *American Journal of Psychiatry, 147,* 645-648.

Meng, X., Rosenthal, R., & Rubin, D. R. (1992). Comparing correlated correlation coefficients. *Psychological Bulletin, 111,* 172-175.

Murburg, M. M., & McFall, M. E. (1992). PTSD research activities at the Seattle VA Medical Center. *PTSD Research Quarterly, 3,* 8.

Norris, F. H. (1992). Epidemiology of trauma: Frequency and impact of different potentially traumatic events on different demographic groups. *Journal of Consulting and Clinical Psychology, 60,* 409-418.

Ouimette, P. C., Weathers, F. W., Litz, B. L., Krinsley, K. E., Brief, D. J., & Keane, T. M. (1994, November). *Psychometric evaluation of the Mississippi Scale for Civilian PTSD in an inpatient sample of substance abusers.* Poster session presented that the conference of the International Society for Traumatic Stress Studies, Chicago, IL.

Resnick, H. S., Kilpatrick, D. G., Dansky, B. S., Saunders, B. E., & Best, C. L. (1993). Prevalence of civilian trauma and posttraumatic stress disorder in a representative national sample of women. *Journal of Consulting and Clinical Psychology, 61,* 984-991.

Robins, L. N., Helzer, J. E., Croughan, J., & Ratcliff, K. S. (1981). National Institute of Mental Health Diagnostic Interview Schedule: Its history, characteristics, and validity. *Archives of General Psychiatry, 38,* 318-389.

Spielberger, C. D. (1983). *Manual of the State-Trait Anxiety Inventory.* Palo Alto, CA: Consulting Psychologists Press.

Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research, 25,* 173-180.

Triffleman, E., & Ball, S. (1994, November). *Screening cocaine abusers for PTSD.* Poster session presented that the conference of the International Society for Traumatic Stress Studies, Chicago, IL.

Vrana, S. R., & Lauterbach, D. (1994). Prevalence of traumatic events and posttraumatic psychological symptoms in a nonclinical sample of college students. *Journal of Traumatic Stress, 7,* 289-302.

Vreven, D. L., Gudanowski, D. M., King, L. A., & King, D. W. (1995). The civilian version of the Mississippi PTSD scale: A psychometric evaluation. *Journal of Traumatic Stress 8,* 91-109.

Zilberg, N. J., Weiss, D. S., & Horowitz, M. J. (1982). Impact of Event Scale: A cross-validation study and some empirical evidence supporting a conceptual model of stress response syndromes. *Journal of Consulting and Clinical Psychology, 50,* 407-414.